

REMARKS

The application has been reviewed in light of the Office Action dated January 20, 2004. Claims 1-13 are pending in this application, with claims 1, 6, 9, 11, and 13 being in independent form. Claims 14-26 have been added hereby, with claims 14, 19, 22, 24, and 26 being in independent form. It is submitted that no new matter has been added and no new issues have been raised by the present response.

Claims 1-13 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,987,446 to Corey et al., in view of U.S. Patent No. 6,122,627 to Carey et al., and further in view of U.S. Patent No. 6,009,422 to Ciccarelli. Claims 9 and 11 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Corey et al., in view of Carey et al., further in view of Ciccarelli, and further in view of U.S. Patent No. 6,085,188 to Bachmann et al.

Applicant has carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claim 1 is patentable over the cited art for at least the following reasons.

Independent claim 1 relates to a method of processing a database service query to obtain a sum of terms, evaluating each term as a separate SQL instruction, and executing each separate SQL instruction.

Corey et al., as understood by Applicant, relates to an information retrieval system for searching large collections of text using multiple search engines concurrently. The system includes a plurality of text search engines based on substantially different computational searching techniques. By activating each search engine with input from a user information request, output from each of the search engines is combined into a single list of information

items, and a ranking process ranks the information items in the combined list by utilizing information item ordering data also received from each of the search engines.

Carey et al., as understood by Applicant, relates to a system, method, and program for object building in queries over object views. The system, method, and program enable an object language application to issue a query over a view and to receive back, as a query result, handles to application type objects which can be further manipulated by the application.

Ciccarelli, as understood by Applicant, relates to a system and method for query translation/semantic translation using generalized query language. The system and method translate a single search request or query across heterogeneous databases independent of database search grammar. A client uses a process to express the query in a programming language, i.e., Generalized Query Language (GQL) which has a wide variety of operations to specify the conditions of the query and enable a fused response to be provided by the databases. The process translates the query into phrases contained in a GQL and constructs a complex search query which bridges the gap between the query and the low level of functionality provided in search engines associated with the database.

Bachmann et al., as understood by Applicant, relates to a method of hierarchical LDAP searching in an LDAP directory service having a relational database management system (DBMS) as a backing store. Entries in a naming hierarchy are mapped into first and second relational tables: a parent table, and a descendant table. The tables are used to filter lists of entries returned from a search to ensure that only entries within a given search scope are retained for evaluation.

With respect to claims 1 and 13, the Office Action cites Fig. 3A and col. 7, lns. 47-67 of Corey et al. as allegedly teaching “applying principles of logic to the service query to

obtain a sum of terms” (see Office Action, p. 2, Ins. 19-20). Additionally, in the section entitled “Response to Arguments,” the Office Action cites Fig. 1 and col. 5, Ins. 13-17 of Corey et al. as allegedly disclosing “receiving a service query” (see *id.*, p. 5, Ins. 18-22).

As understood by Applicant, the sections of Corey et al. cited by the Office Action relate to and describe a process by which a query is used to “generate a set of subqueries $\{Q_i\}$, $i=1 \dots, n$,” (see Corey et al., col. 7, Ins. 47-67). The set of subqueries is defined as “... substantially all combinations of conjunctions that can be generated from the query Q ” (see *id.*).

As understood by Applicant, the “set of subqueries” is not a “sum of terms” as recited in independent claim 1. The set of subqueries of Corey et al. Q_1, Q_2, Q_3, \dots takes as Q_1 the initial query Q (see *id.*, col. 7, line 51). If Q is the original input query, then $Q = Q_1$ (see *id.*).

In contrast, as stated in the specification of the present invention, “[t]he sum of terms represents the service query, i.e., the expression representing the service query ...” (see specification of the present application, pg. 7, Ins. 26-29).

That is, as understood by Applicant, a set of subqueries as disclosed by Corey et al. cannot be made to equal the original query when added together, as the first subquery (Q_1) itself is equal to the original query. The set of subqueries in Corey et al. cannot be the number of smaller expressions because Q_1 is the same size as Q , and therefore no smaller than Q .

In contrast, in the present disclosure, principles of logic are applied to the service query to obtain a sum of terms, as recited in independent claim 1.

Additionally, the service query is translated into an expression and the expression is simplified into a number of smaller expressions, as recited in independent claim 13.

Furthermore, the Office Action states that Corey et al. does not disclose evaluating each term as a separate SQL instruction (see Office Action, p. 2, Ins. 22-23). Carey et al. is cited as allegedly showing the missing element at Fig. 9C and col. 13, lines 6-17 (see id.).

As understood by Applicant, however, Carey et al. states that SQL queries are sent to a relational DBMS. That is, it is submitted there is no indication or suggestion in Carey et al. that each term is evaluated as a separate SQL instruction, but rather only of SQL instructions being sent to a relational DBMS, i.e., SQL instructions being evaluated as SQL instructions.

The Office Action further states that neither Corey et al. nor Carey et al. teach an execution of SQL instructions (see id., p. 3, ln. 7). Ciccarelli is cited as allegedly disclosing “executing each separate SQL instruction” at Fig. 1, col. 2, lines 33-44 (see id., Ins. 8-9).

As understood by Applicant, however, Ciccarelli relates to GQL queries and not to SQL instructions. It is respectfully submitted that the treatment of GQL queries in Ciccarelli, even when combined with Carey et al. and Corey et al., does not show or suggest a treatment of SQL instructions.

It is respectfully submitted that neither Corey et al., Carey et al., nor Ciccarelli, alone or in combination, disclose or suggest a method of processing a database service query, comprising: receiving a service query, applying principals of logic to the service query to obtain a sum of terms, evaluating each term as a separate SQL instruction, and executing each separate SQL instruction, as recited in independent claim 1.

Additionally, it is respectfully submitted that neither Corey et al., Carey et al., nor Ciccarelli, alone or in combination, disclose or suggest translating a service query to an expression, simplifying the expression to a number of smaller expressions, each smaller expression being capable of being flattened, flattening each smaller expression, and executing

each flattened expression, as recited in independent claim 13.

Accordingly, for at least the reasons set forth above, independent claims 1 and 13, and the claims depending therefrom, are believed to be patentable over the cited references.

Regarding the rejection of independent claim 6, the Office Action cites col. 8, Ins. 51-56 of Carey et al. as allegedly disclosing "... determining a SQL instruction representative of a function" (see Office Action, p. 4, Ins. 1-8).

Col. 8, Ins. 51-56 of Carey et al. states "[t]he preferred embodiment of this invention provides an object-oriented database (OODB) view facility based on object-oriented SQL (OO-SQL) queries. The preferred embodiment also uses relational-style query rewrite techniques along with other rewrite techniques that specifically address the optimization of building objects".

It is respectfully submitted that the section of Carey et al. cited above does not disclose or suggest either determining a SQL instruction or determining a SQL instruction representative of a function, as recited in independent claim 6.

The Office Action further cites col. 4, ln. 66 to col. 5, ln. 7 of Carey et al. as allegedly disclosing "listing the results of a subtracted SQL instruction in a first list and listing results of a non-subtracted SQL instruction in a second list," and "not listing results which are duplicates of previously listed subtracted or non-subtracted results" (see Office Action, p. 4, Ins. 1-8; p. 6, Ins. 3-9). Applicant respectfully disagrees.

Col. 4, ln. 66 to col. 5, ln. 7 of Carey et al. states: "...object-oriented or relational, query rewrite transformations and system-managed query optimization are essential features to ensure acceptable query performance. Query rewrite transformations for optimizing queries have been developed previously for relational DBMSS. See 'Extensible/Rule Based Query

Rewrite Optimization in Starburst,' Hamid Pirahesh, Joseph M, Hellersein, and Wagar Hasan, In Proc. ACM-SIGMOD International Conference on Management of Data, San Diego, June 1992" (see Carey et al., col. 4, ln. 65 to col. 5, ln. 7).

It is respectfully submitted, however, that neither the cited portion reproduced above nor the remainder of Carey et al. disclose or suggest listing the results of a subtracted SQL instruction in a first list and listing results of a non-subtracted SQL instruction in a second list, as recited in independent claim 6.

Further, it is submitted that neither Corey et al. nor Ciccarelli, alone or in combination with Carey et al., disclose or suggest listing the results of a subtracted SQL instruction in a first list and listing results of a non-subtracted SQL instruction in a second list, as recited in independent claim 6.

Regarding the rejection of claims 9 and 11, the Office Action notes that neither Corey et al., Carey et al., nor Ciccarelli disclose or suggest directory services relating to a database (see Office Action, p. 4, lns. 19-20). Bachmann et al. is cited as allegedly showing the missing element.

The Office Action cites Fig. 5 and col. 4, ln. 65 to col. 5, ln. 9 of Bachmann et al. as disclosing "[a] directory service arrangement including a database using a plurality of tables, each table having a plurality of rows and columns, and storing arbitrary data" (see Office Action, p. 4, lns. 21-22).

As discussed above, it is submitted that neither Corey et al., Carey et al., nor Ciccarelli teach or suggest processing a service query by applying principals of logic to the service query to obtain a sum of terms or processing a service query by determining a SQL instruction in a first list, listing the results of a non-subtracted SQL instruction in a second

list, and not listing results which are duplicates of previously listed subtracted or non-subtracted results. It is respectfully submitted that Bachmann et al. similarly fails to disclose or suggest these elements.

It is therefore respectfully submitted that Bachmann et al. does not disclose or suggest, either alone or in combination with Corey et al., Carey et al., or Ciccarelli, means for processing a service query by applying principals of logic to the service query to obtain a sum of terms, evaluating each term as a separate SQL instruction, and executing each separate SQL instruction, as recited in independent claim 9.

Additionally, it is respectfully submitted that Bachmann et al. does not disclose or suggest, either alone or in combination with Corey et al., Carey et al., or Ciccarelli, means for processing a service query by determining a SQL instruction in a first list, listing the results of a non-subtracted SQL instruction in a second list, and not listing results which are duplicates of previously listed subtracted or non-subtracted results, as recited in independent claim 11.

Accordingly, for at least the reasons set forth above, independent claims 9 and 11, and the claims depending therefrom, are believed to be patentable over the cited references.

Withdrawal of the rejection of claims 1-13 under 35 U.S.C. § 103 (a) is respectfully requested.

Entry of this response is earnestly solicited, and it is respectfully submitted that this response raises no new issues requiring further consideration and/or search, because the functional aspects of the invention have merely been clarified in the above remarks.

The Office is hereby authorized to charge any additional fees that may be required in connection with this response and to credit any overpayment to our Deposit Account No. 03-3125.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition, and the Commissioner is authorized to charge the requisite fees to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Entry of this amendment and allowance of this application are respectfully requested.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'Richard F. Jaworski', is written over a horizontal line.

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